# The Air Line Pilot

March, 1952

The Ageing Air Line Pilot --- Page 2

Smoking in Flight --Page 6

Dr. McFarland
—Page 2—

# Air Line Pilot in Higher Age Range

**by Dr. Ross A. McFarland**

The Natural process of ageing is of more significance for airmen than for most occupational groups because of the exacting demands on their individual abilities and capacities. Since physical fitness and sensory functions deteriorate as a man grows older, a fair estimate of his capacities and abilities at any given period will depend on a knowledge of the amount of deterioration which can be normally expected at that time. As a pilot grows older, the alterations in sensory functions may influence his efficiency significantly. His vision may be so altered as to hamper his performance in landing. Hearing losses may interfere with his ability to follow radio beams accurately. Slowing reaction times, reflecting a poor integration of perceptual and motor skills, may lead to a loss of confidence in his ability to handle the plane quickly and effectively. These changes vary greatly from one person to another in both nature and extent, but even minor deterioration may interact to produce a significant loss in over-all efficiency. The most important question is, therefore, when in the ageing process is physiological and psychological deterioration no longer compensated for by experience?

In this discussion of airline pilot effectiveness, it might be well to interpret the word "effectiveness." In my remarks, it will imply functional efficiency on the job. The final criteria therefore is whether a pilot can meet the rigid requirements of being checked out at various intervals under the most exacting requirements of this industry. If possible, the check out or interval testing should be highly objective and standardized. It should also reproduce peak loads of activity and simulate the most acute emergency that might arise in the line of duty.

## Age Distribution

Before discussing some of the experimental results in this field, it is in order to examine the age distribution of the general population in the U.S. and the age distribution of airline pilots. The progressive increase in the average length of life leads to the conclusion that the U.S. is becoming a nation of older people. The percentage of individuals 45 years of age or older increased from 12.4 per cent in 1850 to 26.5 per cent in 1940. It is estimated that in 1980 about 40 per cent of the population will be in this age group, and 15 per cent will be 65 years of age or older. There are approximately 11 and one-half million persons over 65 years of age today, and in 25 years this number will practically double. These changes have far reaching social implications and are already being reflected in industry as a whole in a surprisingly rapid increase in the average age of employees. Airline pilots are no exception.

At the present time the age characteristics of the airline pilot population differ radically from those of the total population, since the majority are in the younger age group. As time passes, however, an increasingly larger number of pilots will enter the older age groups. In order to follow the trends a study of this problem is urgently needed.

It has been possible for the author to obtain data in regard to the age distribution of pilots, from the Airlines, the ALPA, and the Medical Division of the CAA (see fig. 1).

In 1946, there were 698 or 9.6 per cent of the 7,237 airline pilots over 40 years of age. In the group frequently designated as older pilots, i.e., those over 45, there were 234 or 3.3 per cent; only 95 or 1.4 per cent were 50 or over. It is interesting to note that by 1950 there were 1,637 or 20.2 per cent of the airline pilot population over 40 years of age, 531 or 6.4 per cent over 45, and 175 or 2.1 per cent over 50. The data in Fig. 1 indicates that fewer men in the younger age groups are being hired and that many in the older age groups are continuing in active airline service. A smaller number of airmen over 50, however, are remaining on active duty than might be expected from the proportion entering this age group.

The point might be raised as to whether the inclusion of copilots might be responsible for the large proportion of aviators in the younger age groups. The separate tabulation of first and supervisory pilots for 1946 given above indicates clearly that here too the proportion of pilots over 40 years is small (388 or 12.3 per cent). The small percentage of airline pilots in active service who are 45 or over explains why a pilot of this age group is considered relatively old when in many other industries he would be considered relatively young. As time passes, it will be interesting to observe the number of pilots who can meet the medical and performance standards as they enter the higher age bracket, that is over 50 or 60 years of age. At present we do not know how long pilots will be able to fly.

Recent investigation in Connecticut of the frequency of automobile accidents in relation to age indicate that there is no consistent increase in accidents in the older drivers. The most dangerous age for drivers is in the late twenties. This is true even when the greater yearly mileage of the younger driver is taken into consideration. There is a general decline in the frequency of accidents from the later twenties up to 55 years of age. More mature experience and better judgment enables the older driver to compensate for any declining abilities in


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W. Johnston, Editor

coordination and braking reactions.

One criteria for judging effectiveness in flying might be by the number of minor and major accidents experienced by each airman. Unfortunately, this information is not available. However, I have obtained the ages of the pilots in command of the aircraft in 59 accidents involving fatalities during the past 12 years in the U.S. scheduled operations. There was no evidence to indicate that the older pilots had more accidents than the younger ones. Fatigue was not involved because 51 of these accidents occurred within the first three hours of flight in short range operations. There was a slight trend to higher accident rates during the winter months and 35 occurred during twilight or at night. This latter observation might be of significance in the case of the older pilots whose dark adaptation is known to be less acute with increasing age.

## Mechanisms

### Ageing and Homeostatic

The concept of homeostasis or the maintenance of a physiologically "steady state" by the adaptive mechanism of the body is relevant to the present discussion. There are no marked changes in such indices as body temperature, blood sugar, or acid-base balance of the blood. It is generally recognized that they are relatively stable throughout adolescence and early maturity if excessive strains are not imposed on the body by the environment. In old age, however, certain changes have been reported.

The regulatory mechanisms by which the body maintains a constant internal environment may be interpreted as follows: These mechanisms seem to undergo a progressive change after the age of 40. The regulation of body temperature, for example, becomes more difficult (1) in a cold environment because of a lowered metabolic acticity and diminished muscular vigor, and (2) in a hot environment because of a limited ability to dissipate heat through the skin in which capillaries may be degenerated, sweat glands deficient, and the smaller arteries contracted. The regulation of blood sugar is impaired to a degree which may result in a high, prolonged concentration of glucose in the blood. Although there is no significant forrelation between fasting blood sugar levels and age, there is a progressive diminution in tolerance following the intravenous injection of glucose in subjects over 70 years of age. There is a significant impairment of the physiological capacities of the kidneys which may be detected before clinical signs of kidney disease are manifested.

The acid-base equilibrium of the blood remains fairly normal under resting conditions, and elderly subjects retain their homeostatic capacities with respect to this function. Under physiological stress, however, the regulation of the acid-base balance appears to be affffected by a reduced maximal to and from movement of the air in respiration, less adaptable blood vessels, and a diminished ability of the heart to accelerate. The older person does not have so large an oxygen supply for the active muscles needed for vigorous exercise as do children and young adults. The condition of the homeostatic mechanisms in old age has been summarized in the statement that *when subjected to stress, they are recealed as being more and more narrowly limited in their ability to preserve uniformity of the internal environment of the living parts.*

The above generalization is well illustrated from data obtained in the Harvard Fatigue Laboratory in testing the physiological responses of a large number of subjects varying in age from 6 to 75. Using exercise on a treadmill as a stress situation and pulse rate attained per minute in maximum work as a criterion, there was observed an over-all decline in heart rate from 190 (mean for 20 years) to 165 (mean for 60 years) with increasing age. This tendency is graphically indicated by the curves in Fig. 1. The rather striking overlap between contiguous age groups is well demonstrated by the wide scatter of the individual measurements. Oxygen intake under both resting and working conditions, respiration and lung ventilation rates, and certain other variables also showed characteristic over-all changes with advancing years. Age, therefore, appears to be a factor in determining the response of the cardiovascular system to maximal physical exertion.

Another interesting illustration of the response of older persons to a fixed stress is available from our studies in the field of aviation. Over 200 subjects, representative of the flying public, were studied in relation to their responses to high altitude (reduced oxygen pressure). They varied in age from 18 to 70. The data on pulse rate illustrate the general trend toward slower pulse rates with increasing age. The older subjects, on the whole, appeared to have fewer complaints and were less susceptible to fainting and collapse than the younger ones at simulated altitudes up to 16,000 feet. Similar findings, i.e., the increasing stability of cardiovascular responses with age, have been reported on 237 subjects studied in a low-pressure chamber in Germany. These observations are borne out by the actual experience of the civil airlines in which many older people fly at moderately high altitudes without apparent ill effects.

In general, older men in good health do not show signs of age which might interfere appreciably with the constancy of the internal environment. Airline pilots do not undergo severe physical stresses from their occupation. Nervous and emotional control appears to be a more important requirement.

## About the Author

Dr. Ross A. McFarland is Associate Professor of Industrial Hygiene at the Harvard School of Public Health in Boston, Massachusetts. In recent years, he has carried out an extensive research program in the fields of aviation and industrial medicine. After graduating from the University of Michigan in 1923, he obtained a doctorate in physiological psychology at Harvard in 1928 and later studied at Cambridge University in England. In 1935, he was a member of the International High Altitude Expedition to Chile, sponsored by the Harvard Fatigue Laboratory, and he has continued his studies of the effects of altitude and fatigue, having published over sixty articles in various journals.

As Medical Coordinator of the Pan American World Airways System, Dr. McFarland was responsible for initiating its medical program and coordinating its general activities. He directed the flight fatigue studies of air crews during the opening of the transatlantic and transpacific routes of PAA. In 1940, he directed an extensive research program on the selection of pilots at Pensacola, Florida. Subsequently, he organized and coordinated the medical program of the Trans-African air ferry routes. In 1943, he served as an Operations Analyst for the 13th Air Force of the AAF in the Solomon Islands Campaign.

Dr. McFarland has written two books in the field of aviation. The first is entitled, "Human Factors in Air Transport Design". The second one, now in press is entitled, "Human Factors in Air Transportation—Occupational Health and Safety". He is a member of the Operating Committee of the National Advisory Committee for Aeronautics and the President's Conference on Industrial Safety.

The following paper was given in a Symposium on "Changes in Airline Pilot Effectiveness Seen in the Higher Age Range" at the School of Aviation Medicine, Randolph Air Force Base, Texas, during a recent meeting of the Airline Medical Directors Assn. The material is abstracted from a chapter from a forth-coming book by Dr. McFarland entitled "Human Factors in Air Transportation", to be published by McGraw Hill.

## Ageing and Sensory Functions

All the senses show a decrease in acuity with age. In such functions as smell, taste, vibratory sensation, and pain, the changes are usually of little significance and may be even advantageous in certain tasks. In other functions, such as vision and hearing, the changes are often not extensive and frequently they cause less interference with industrial productivity than is generally supposed. In aviation, adequate vision and hearing are important for the flight crews. Small changes with age must be taken into consideration, especially in the presence of preexisting handicaps.

In recent years, a great deal of confusion has existed in regard to standards of physical fitness for pilots in relations to the requirements of the job. There is disagreement not only in regard to the functions to be tested but also as to whether the standards should be more lenient. Those who argue for greater leniency point out the lack of relationship between the findings on medical examinations and accidents. My view is that a sounder basis of relating physical requirements to performance should be developed. In other words, after it has been clearly determined what a pilot is expected to see and hear or what physical stresses he may encounter, the tests and various other aspects of the physical examination should be directed toward these traits or functions.

## Auditory Problems in Older Pilots

Several conditions should be kept in mind in establishing physical standards in regard to hearing and in designing auditory aids for crewmen in flight. One factor relates to the nature of the hearing losses observed in older pilots. A second to the requirements of the job, or the signals which must be heard during flight, and a third to the design of equipment in relation to the hearing losses which are common among older pilots. Relevant data on each of these aspects of hearing requirements for airline pilots is briefly summarized below.

In regard to hearing losses, audiograms were obtained for two groups of airline pilots. The effect of various cut-off points on the present airline population can be studies from these data. If no more than a 20 decible (db) loss is allowed at 3,000 cycles (cps) per second a certain number of pilots will be disqualified. If 4,096 cps is included as a test frequency, the percentage eliminated will increase very rapidly as the cut-off point is raised in terms of maximum permissible loss. In the case of the left ear, for example, changing the cut-off point from 40 db to 20 db means that the percentage of eliminees will be more than tripled, i.e., 22.2 per cent instead of 6.6 per cent. Obviously, the requirements of the job should be considered before eliminating older men on the basis of hearing loss alone.

The first, and most important, requirement is to study the functional relationship of these findings to the task of aircraft piloting. It is necessary first of all to determine the critical frequencies which pilots should be able to understand. To hear the human voice and the most frequently used signals, good hearing is required in the frequency range of about 500 to 3,000 cps. The four-course radio range or radio beam is the chief signal and is operated at 1,020 cps. The important voice frequencies range up to about 2,500 cps. Beyond this point, the only frequency which must be heard is 3,000 cps, the highest of three frequencies used for fan and cone markers. In this connection, it should be noted that these markers operate a visual signal on the panel as well as an aural signal. It is therefor, apparent that test frequencies of 512, 1024, and 2896 should give a satisfactory frequency range over which the pilots' hearing should be measured.

Another consideration is the extent to which signal amplification can be used to offset hearing losses. Such amplification is feasible only within certain limits. For example, if the volume control for the radio beam is increased by an excessive amount, the receiver will no longer differentiate the A and N signals. Normal pilots frequently listen to this signal at a headphone intensity of only a few milliwatts. A pilot with a 30 db hearing loss at this frequency might require about 1 watt amplification, an intensity level leading to distortion and possible misinterpretation of the signals. Similarly, at 3,000 cps a loss of more than 25 db might mean that the aural signal would not be heard. However, the signal also operates a panel light which would probably be seen. Insofar as design of equipment is concerned, it would be desirable to introduce new signal frequencies only within the ranges which can be most easily heard by the majority of the pilots.

In the interest of safety, a standard of 20 db maximum permissible loss at 512, 1024, and 2048 cps and of 25 db at 2896 would seem to be satisfactory at the time of selection. If such a disqualification standard was set up for older pilots, about 13.5 per cent of the present airline population would be disqualified. Obviously, such a regulation would be unwise unless it was established that such hearing losses would be dangerous.

In the case of older, more experienced pilots, some leniency should be permitted. This is particularly true since those with hearing losses have more normal hearing in the presence of noise on the aircraft. This is a result of the "recruitment" phenomenon in their hearing. The principal reason is that low intensity signals are masked. In fact, for very loud intensities, the person with marked hearing losses as measured by the audiometer may actually hear quite well. Older pilots with hearing losses therefor should be tested in simulated aircraft noise. If the hearing losses do not interfere with intelligibility of normal

### AGE DISTRIBUTION OF PILOTS IN U. S. AIRLINE OPERATIONS

| 5-Yr. Age Groups | First and Supervisory Pilots, 1946 | | All Airline Pilots 1946 | | 1949 | | 1950 | |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % |
| 24 and under | 69 | 2.4 | 269 | 3.7 | 46 | 0.6 | 32 | 0.4 |
| 25 - 29 | 742 | 25.3 | 2,869 | 39.6 | 1,791 | 23.8 | 1,440 | 17.4 |
| 30 - 34 | 951 | 32.5 | 2,169 | 30.0 | 2,703 | 36.2 | 3,147 | 33.2 |
| 35 - 39 | 779 | 26.6 | 1,232 | 17.0 | 1,605 | 21.4 | 1,963 | 23.8 |
| 40 - 44 | 231 | 7.9 | 464 | 6.4 | 942 | 12.6 | 1,142 | 13.8 |
| 45 - 49 | 104 | 3.6 | 139 | 1.9 | 262 | 3.5 | 356 | 4.3 |
| 50 and over | 53 | 1.8 | 95 | 1.4 | 139 | 1.9 | 175 | 2.1 |
| Total | 2,929 | 100.0 | 7,237 | 100.0 | 7,488 | 100.0 | 8,255 | 100.0 |

conversation safety would not be compromised. The ICAO Hearing Requirements, as recently modified for airline transport pilots takes this factor into account in that a practical test on the aircraft is allowed. This is fairer to the pilot and relates the test to the performance of his duties.

## Visual Problems in Older Pilots

It is clearly recognized that there are significant changes in certain visual functions with increasing age. The use of lenses by older pilots has been successful to correct changes in visual acuity. Only one additional area will be discussed, namely light sensitivity, or changes in dark adaptation.

The ability to see quickly and accurately under low illumination, particularly during landings and take-offs, is essential for a pilot. The author determined the dark adaptation curves for 207 pilots in the age range 20 to 47 years with a night vision adaptometer. The changes with age are quite large in this function. Similar results have been reported in a study at Columbia University using the same apparatus. are quite large in this function. Similar results have been reported in a study at Columbia University using the same apparatus.

Changes with age in the light threshold of the dark adopted eye have been reported by the U.S. Public Health Service in 130 subjects ranging from 18 to 83 years of age. A significant decrease in sensitivity of the dark adapted eye was noted as age increased. The decline was most marked in subjects beyond the age of 60. Measurements of the rate and level of dark adaptation were made in another study on 91 subjects aged 40 to 83 years, using the same apparatus. Although no correlation was found between age and the rate of dark adaptation, there was a significant decrease in the final level of adaptation in the older subjects. The results of this study were similar to those obtained by the author for pilots of comparable age.

The interpretation of these findings for airline pilots is as follows: if they are required to see at low levels of illumination, they might be handicapped at ages over 50 years. In civilian flying, however, dark adaptation is destroyed by the bright lights at airports for all pilots and age is not a variable. At certain times an older pilot may have to depend on his younger copilot. This problem is of greater importance for older persons driving at night on the highway and it is well known that the accident rate is high in this regard.

## Ageing and Psychomotor

The efficiency of manual skills involving motor activity and reaction time is influenced largely by physiological and anatomical changes, but deterioration in any one component does not necessarily have an adverse effect on efficiency. Extensive studies of adult motor activity carried out at Stanford University have revealed no sudden alterations from one age group to another. There was a gradual rise in quickness of response in childhood and youth followed by a slow decline in maturity. The average performance of a considerable number of older persons equalled or exceeded that of individuals who were several decades younger.

Information is also available on the psychomotor performance of pilots in test situations somewhat analagous to the piloting of an aircraft. The Mashburn Serial Reaction Time Test, which involves the coordination of stick and rudder movements in response to a changing visual pattern was given to 200 airline pilots. The scores are in terms of the speed with which a pilot can complete a series of 40 different settings. The mean score for the 20-47 year age group was 6 min. 38 sec. The slowing up in reaction time with age was found to be statistically significant. The implications of these data for handling a large transport are somewhat limited since most flight situations do not require instantaneous responses. Slow reaction time may become critical, however, in landing procedures when a large number of actions must be carried out in rapid succession. An element of safety is provided in transports where the older captain always has a younger man as co-pilot.

## Ageing and Memory

The most obvious mental change in advancing years is the failure in memory for recent events. Details of more remote occurrences are remembered vividly. This fact was verified in a recent study of the capacity for immediate memory in 174 older subjects in comparison with an equal number of men in their 20's. The two groups were of equal intelligence as judged by mental tests. The results showed that the older persons were slower than the younger ones in their ability to form new associations based upon entirely new material.

A pertinent finding relating to immediate memory was demonstrated by the author in a study of the response of various age groups to oxygen deprivation, simulating high altitude. During the course of these experiments, each subject was assigned several series of 10 pairs of unrelated words to memorize. The influence of age was revealed by the fact that, whereas the average college student could remember approximately 8 out of 10 words, his professors over 60 years of age could recall on the average only 4 or 5. When the younger men were deprived of oxygen, however, their ability to remember was strikingly reduced, closely approximating the performance of the older persons in normal air. The relative decrease in immediate memory at high altitudes was slightly less for the older men, possibly reflecting their greater physio-chemical basis for this mental function. It is possible that the older men's decline in memory is attributable to changes in circulation of the blood and the metabolism of the brain. The implications for the older pilots are that they should set up methods of checking their memory in routine cockpit duties. Furthermore they should protect themselves against the effects of high altitude by inhaling oxygen if the cabin is not pressurized.

In my opinion, the most important change in airline pilots beyond 50 years of age relates to their more limited ability to carry out a series of complex reactions involving memory, judgment and reasoning, within specific time limits.

Evidence for this view may be obtained from the studies of Welford at Cambridge University, England. They found that in new situations the mechanisms concerned with organizing verbal or visual material function less efficiently in the older person and require stronger "signals" or more time to relate the new data to relevant material in past experience. If older persons are allowed to deal with incoming problems more leisurely there is less likelihood of their becoming "muddled." They should not be placed on jobs requiring continuous rapid action but are particularly well suited for operations which demand a high degree of accuracy since their deficiency in organizing new material is often more than offset by gains in quality and accuracy of performance once the material is assimilated.

The older transport pilots claim that their ability to foresee emergencies, and to plan a course of action in advance is more valuable than the youthful pilot's swift reaction when the emergency occurs. Our studies seem to confirm this belief. The older pilot's experience in airline operations, therefor,

*(Cont. on Page 15)*

# Smoking in Flight:

## That "relaxing" cigar or cigarette may be too effective. The Air Line Pilot reports here an expert's opinion, gained from case histories and research, on the possible harmful effects of smoking in the cockpit.

In his book, HUMAN FACTORS IN AIR TRANSPORT DESIGN, Dr. Ross A. McFarland, Division of Research, Harvard University, devotes a portion of a chapter to a case history on the adverse effect of smoking while in flight: "During 1943, an interesting series of observations was made by Capt. L. C. Lindsey of PAA during ATC operations between Miami and India. The flights extended over many hours at cruising altitudes of 8,000 to 12,000 feet. Under ordinary conditions at sea level, Capt. Lindsey and members of his crew smoked on the average, one to two packages of cigarettes per day; thus prejudice against smoking was not involved. After experiencing considerable fatigue during these long flights, they made a trip without smoking, either on the ground or in the air. This practice was continued throughout a number of trips. All the airmen were convinced that they were less exhausted and more efficient in performing their duties. Similar findings were reported by two other crews who tried this experiment on long range operations."

### Carbon Monoxide

The question of whether air crews should be allowed to smoke in flight has been kicked to and fro for many years. Pro arguments insist that smoking gives pleasure and relaxation. Those opposed contend smoking lowers the efficiency of the crew by causing premature fatigue. On the side of the opposed there is an impressive amount of scientific data, such as the case history of Capt. Lindsey and his crew.

In his book, Dr. McFarland explains that carbon monoxide inhaled along with tobacco smoke is the reason for fatigue caused by smoking. Carbon monoxide, he says, interferes with the transportation of oxygen from the lungs to the body tissues, resulting in an abnormal body function. Explaining the normal function, Dr. McFarland says: "When a breath of air is taken into the lungs, it enters . . . the small air sacs of the lungs. The oxygen [then] diffuses through the walls . . . into the blood . . . [which] contains hemoglobin, a pigment, that combines with oxygen . . .

Dr. McFarland follows the explanation of the normal function with a paragraph on the resulting action when carbon monoxide is drawn into the air sacs of the lungs: "Unfortunately hemoglobin is not sufficiently selective as to the type of gas with which it will combine. It takes up carbon monoxide in exactly the same way as oxygen . . . In fact, at body temperature, its preference . . . for carbon monoxide is about 210 times as great as for oxygen. Thus . . . the odds are 210 times in favor of carbon monoxide to the exclusion of oxygen. Very small concentrations of carbon monoxide can therefore inactivate a large amount of the hemoglobin as an oxygen carrier, producing . . . an enemia." The action of carbon monoxide thus diminishes the amount of oxygen carried from the lungs to the blood and slows down the liberation of oxygen from the lungs to the tissues.

### Oxygen Deficiency

To most, carbon monoxide is thought of in connection with newspaper accounts of accidents and suicides in closed automobiles. It is seldom associated with smoking. Dr. McFarland explains: "A considerable amount of carbon monoxide is produced by the incomplete combustion of tobacco and is found in the inhaled smoke. About 1 to 2.5 percent of the total volume of the smoke of a cigarette is carbon monoxide. The content in cigar smoke may be as high as 5 to 8 percent."

Since carbon monoxide in the blood stream causes an oxygen deficiency, its influence is similar to the effects of high altitude over sea level. If a pilot is flying at 6,000 feet, with 1.0005 percent carbon monoxide in the air, his physiological altitude is increased to about 12,000 feet. The same amount at 9,000 feet raises the physiological altitude to almost 15,000 feet.

### Effects

The initial reactions caused by this are not noticeable by the subject. A headache is the most prominent symptom. Others are lowered attention, difficulty in concentration and retention, slight muscular incoordination, sleepiness, and mental and physical lethargy. While no permanent injuries usually result, such symptoms could quite conceivably be the cause of an accident.

### Origin

Smoking, of course, is only one of the manners in which carbon monoxide finds its way into the cockpit. The most likely sources are primary power plants; faulty internal-combustion heaters, defects in heat exchangers and fire walls, and improper location of ventilating system are a special source of danger when located too near the exhausts of the engines." Carbon monoxide may also find its way through wing passages or be forced through openings in the fuselage by peculiarities in the slip stream.

### Solution

Dr. McFarland recommends that there should be periodic samplings of the air in various parts of the cockpit and cabin of air transports used in long-range flying. Lightweight, accurate, continuous recording devices with automatic warning signals should be installed as soon as they become available. In the meantime, he recommends, that the air be analyzed with a National Bureau of Standards apparatus which detects the amount of carbon monoxide in the air, and that the blood of flight crews be tested by a microgasometric method, which uses fingerprick samples.

Another recommendation by Dr. McFarland is that carbon monoxide determinations be made on the blood of air crews following near accidents as well as actual accidents in order to ascertain whether carbon monoxide might have been a contributing factor.

Finally, he recommends that 0.003 percent carbon monoxide in the air of the cockpits and passenger cabins be used as the standard permissible limit in long-range air transportation for flights of 8 to 12 hour duration. It is concluded that a limit of 0.003 is safe.

As to the answer to the problem of carbon monoxide inhaled through smoking, there is but one obvious solution: stop smoking.

# Opinion:

**Roy Carlton, columnist for the Long Island Daily Press, has taken a look at the men who pilot airliners and has decided they are worthy of the public's admiration. The following is reprinted from a column titled, "You Can Bet Life on Airline Pilot."**

### Code of Ethics

Elizabethans are publicly thanking God this man Lyons was at the controls. They may not realize that the air world is full of men like Lyons . . . that pilots . . . have died on numerous occasions in attempts to spare people below . . . that this particular breed of man has a code of ethics relatively unknown since the days when sea-skippers went down with their ships.

We're thinking not only of famous names like . . . Dick Merrill of Eastern Airlines who saved 65 passengers from disaster when he took over the controls of . . . a Constellation three years ago when a run-a-way prop all but cut the plane in two . . . or of Pan American's Arty McCullough of Garden City who is now a reserve general on active duty in the Air Force. We're thinking of pilots generally.

Flying men undertake no oath when they begin their careers . . . at least not in the manner that doctors, lawyers and military men do. Yet their devotion to duty and sense of responsibility to all mankind is something that might well be emulated by all professions.

### Elizabeth Accident

No matter how you feel about airlines, airplanes and airports, you've got to . . . admire and respect the men who hold the lives of so many of us in the balance when they hold a control wheel. This is especially so when you get to know them.

It's easy to . . . admire our military fliers whose swashbuckling jet fighters today are carving holes in many MIG-15's over Korea . . . or who fly complex bombers that stand ready to drop the atom bomb if, where and when it becomes necessary to do so.

It's just as easy to feel this way about a transport . . . pilot. All it takes is one occasion. People in Elizabeth, N. J. learned this when a hitherto unknown transport pilot "fought" his stricken C-46 transport plane down to the river to avoid crashing into their homes.

They say he spared the lives of scores of children sleighing on a hillside and possibly 400 more attending a party in a nearby building.

### A Promise

A pilots code is his conscience . . . If he swears to anything when he wins his wings, it's a promise to himself to protect his person to the best of his ability . . . to have a healthy respect for the machine he operates . . . to make a (comprehensive) check of his plane before he takes off . . . and to duck bad weather whenever possible.

You'd be surprised how many of these men live their lives by an old pilot expression: "Hot pilots never make old pilots." And you'd be surprised how many pilots have one consuming ambition . . . to grow a long, white beard. They want to live to collect old age insurance.

Their generally exemplary conduct, practiced privately as well as professionally, is more befitting a person than what we ordinarily think of in a flying man.

### Domestic

They like to dig their domestic roots as deep as the clouds they fly through are high.

You have to look hard to find a scheduled transport pilot who is either unmarried or childless. It's even harder to find an airline captain who doesn't own his own home.

The men who bounce around the world three and four days at a time seem to place a higher value on something solid to come back to than a good many of us.

Few of them refuse to believe in God. Someone once said, "You'll never find an aetheist in a cockpit." That's generally true.

What does all this add up to? you ask . . . besides possibly an insight to the men who fly the nation's transports.

It explains a pilot's shepherd-like . . . for his passengers and for the children and housewives in the communities over which he flies. It provides the motives that engender a devotion to duty . . .

Pilots are the airlines' most precious possessions (they're selected not only for their flying ability but for their level-headedness.) If faced with a dread decision, they'll almost always turn out to be another Lyons. You can bet your life on that.

# Camera

Several ALPA departments have moved into permanent positions in the new headquarters building. Among them are the Membership Department (above), the . . .

Air Carrier Communication Operators Association Board of Directors meeting held March 6, in the new Headquarters building. In the usual order are: Vemba McLean, Calvin Langhurst, Laurence Grant, Gerald Morrison, Wayland Shook (newly elected President), Kathryn Flynn, and Charles Corrigan.

Mimeograph and Mailing Department . . .

and the Council Department. In the background is Scruggs Colvin Council Coordinator.

# News

## Decommissioning Policy for U. S. Low/Medium Frequency, 4-course Radio Ranges

The Air Coordinating Committee's Air Traffic Control and Navigation Panel has determined that there should be virtually no decommissioning of the Low/Medium frequency ranges until at least July 1, 1953.

The ACC at the same time reviewed the factors governing the policy and program for decommissioning the L/MF 4-course radio ranges presently operated by the CAA, which are being replaced by the static-free Omni-range system.

### ALPA's Opinion

At the Sixth Executive Board the subject of discontinuance of several L/MF radio ranges was discussed and the following conclusion reached: "After the Class I type facilities have been discontinued, (Class I are ranges which are not considered necessary for the operation of low frequency instrument flight rule system and have already been discontinued), no more L/MF radio ranges should be discontinued until dual omni receivers are on all air line aircraft which are required to operate under IFR conditions. Class II, III, and IV type L/MF aids are those required for operation of a L/MF instrument flight rule system. Before any of this type of radio ranges are discontinued, they should be subject to review to see if their status has changed during the waiting period to be decommissioned."

### Previous Decision

In a previous ACC decision on the decommissioning policy, it was stated that the total decommissioning of all L/MF 4-course radio ranges would create serious communications and navigation problems for American Aviation. Consequently, at that time the ACC recommended that a limited National L/MF 4-course radio range system should remain in operation for an interim period.

This latest ACC action also provided for the establishment of a special group under cognizance of the ACC's Navigational Panel, to be composed of technically qualified representatives from ALPA, CAA, Navy, Air Force, and aircraft owners, for the purpose of making an immediate detailed study in regard to the retention of certain necessary L/MF airways and facilities, as well as the functions required for the limited L/MF system which will be retained. The ATA was also included in the membership of this group for participation when U. S. airline interests are involved.

## Prop Reversing Systems

Charles Daudt, American Airlines council 22, New York, pilot and engineer, is representing ALPA in the CAA investigation of prop reversing systems. Captain Daudt will follow the investigation and will coordinate the work and recommendations of the various pilot committees working on this problem with CAA. It is planned that this coordinated effort by ALPA will serve to tie together an exchange of information for solutions on the part of CAA, the operators, and ALPA.

The investigation is a result of the National Airlines' DC-6 accident at Newark in which a propellor was found reversed in the wreckage. Following the accident, the CAA ordered all DC-6 operators to relocate the reversing electrical circuit as a possible method of eliminating a repetition of the reversing. Many have not been satisfied with the extent of the safeguards against propellers reversing in flight.

## CAA-CAB Cockpit Credentials

The Civil Aeronautics Administration and the Civil Aeronautics Board have prepared credentials to allow their authorized members entrance to the cockpit. In a letter to ALPA, they have designated those officials as follows:

1. CAA representatives whose duties consist of the inspection of air carrier operational procedures, aircraft, engines, propellers, appliances, route facilities or airmen competency. These persons are issued Form ACA-110A—"Air Carrier Inspector's Credential Card." CAA representatives will present this card to the pilot when they desire to enter the cockpit.

2. CAB representatives whose duties parallel the above are issued Form GA-24—"Access to Aircraft Certificate."

3. Certain CAA representatives of the Office of Federal Airways whose duties concern the operation of air navigation, traffic control, and communications facilities are issued Form ACA-700 — "Authorization to enter pilot's compartment." This form authorizes the holder to enter the cockpit in performance of official duties provided the Captain has granted permission.

4. Certain persons whose presence in the cockpit has been specifically authorized by the management of the Company, and the Administrator are issued Form ACA-234 — "Access to pilot's compartment." This form is subject to periods and restrictions specified on it and to the approval of the Captain. Authorization will normally be made valid for use only during cruising performance, except in such cases when authorization includes cockpit occupancy during take-offs and landings in order to accomplish the purpose for which the Form is issued, i.e., Observing the performance of automatic propellers on take-off and landing.

It should be noted that only the holders of CAA Form ACA-110A and CAB Form GA-24 conduct actual inspection duties. The holders of Form ACA-700 and Form ACA-234 are authorized admission solely for the purpose of observing and becoming familiar with the problems affecting scheduled air carrier operations.

## Presidential Commission on Airport Safety

Lt. Gen. James H. Doolittle, chairman of the President's Committee on Airport Safety, emphasized recently that he is limiting his activity to airport planning, and not touching upon general air safety: ". . . this commission has not been directed to investigate accidents but will, of course, consider statistical analyses of those which have occurred so that it can formulate a sound airport development policy for the future."

Doolittle's staff consists of S. Paul Johnston, director of the Institute of Aeronautical Sciences; Philip A. Hahn, CAA Office of Airports; A. D'Arcy Harvey, CAB economist; John W. Crowley, Jr., associate director of research of NACA; Capt. W. P. Cogswell, Bureau of Aeronautics, and Colonel Ross Milton, USAF. The other two members of the Commission are CAA Administrator Charles F. Horne, and Dr. Jerome C. Hunsaker, Chairman of the NACA.

The Commission has dispatched a series of questions on airport matters to cities selected on the basis of air traffic density. Doolittle emphasized that the President has requested a Commission report within 90 days and asked that the information be sent to the Commission by April 7.

Information desired: 1) Estimated annual value of all aviation activities to the communities. 2) Probable trend of such activities in the foreseeable

future. 3) Invested capital in the civil airport serving the cities. 4) If any airport in the communities constitutes a nuisance. 5) If there has been any discernable movement in recent years of industrial and residential areas toward present airport sites. 6) What actions have been taken in the past or are planned to alleviate any nuisance value. 7) If there is any organized local opposition to existing airport patterns. 8) If there is any organized local support for present airport patterns.

## CAR-of-the-month

***"Authority of the Pilot: The pilot in command of the aircraft shall be directly responsible for its operation and shall have final authority as to operation of the aircraft. In emergency situations which require immediate decision and action, the pilot may deviate from the rules prescribed in the part (60) to the extent required by consideration of safety. When such emergency authority is exercised, the pilot, upon request of the Administrator, shall file a written report of such deviation. In an emergency situation which results in no deviation from the rules prescribed in this part (60) but which requires air traffic control to give priority to an aircraft, the pilot of such aircraft shall make a report within 48 hours of such emergency situation to the nearest regional office of the Administrator."***

**—CAR 60.2**

## Ground Stations Use New Alphabet

The new air-ground phonetic alphabet recently adopted by member nations of the International Civil Aviation Organization (Air Line Pilot: January) will be put into use April 1, at all CAA ground stations and facilities.

CAA Administrator Charles F. Horne pointed out that the use of the new alphabet is not mandatory. CAA towers, communications stations and air route centers will reply to any queries or messages regardless of what alphabet is used. Broadcasts or replies by CAA personnel, however, will utilize the new words when appropriate.

At the South American Regional Air Navigation meeting in June of the next year, the Spanish speaking representatives advised that the U. S. alphabet was unsuitable for the Spanish tongue. A supplementary alphabet was adopted, making two phonetic alphabets in use.

The clumsy situation, the use of two alphabets, was finally resolved through action of the Communications Division of the ICAO in January, 1949. A special group was assigned the task of developing one phonetic alphabet to satisfy all international requirements. The group sought words that: 1) Could be easily pronounced and understood by airmen of all languages. 2) Had good radio transmission and readability characteristics, regardless of noise or static. 3) Were "live" words in each of the three principal languages, English, French, and Spanish. The new alphabet which goes into effect April 1, was the result.

## Approach Light Policy

The Director of the Office of Federal Airways has instituted a new policy regarding operation of high intensity approach lights. It has been determined that these approach light systems will be operated in accordance with the following five step policy:

"(1) High intensity lights should be lighted at any time of day or night when instrument approaches are being conducted; at any time a pilot so requests; and at other times if the controller deems it advisable.

"(2) High intensity systems operated at high brightness may dazzle the pilot unless visability is very poor. Tests indicate that lights may be dazzling when operated at steps 4 or 5 (See table 1) at night during visability conditions greater than ¼ mile. The following table is to be used as a guide to normal operation of the lights but the intensity shall be changed upon request of individual pilots.

"(3) The table of brightness settings is for use with white lights, but experience may show that red light settings should be burned one step brighter. Brightness settings may be varied during the day time according to whether the day is bright or dark, and at night according to the amount of extraneous lighting of buildings and highways. Individual approach light configurations and locations may require different settings.

"(4) The lights need not be on during the conduct of practice instrument approaches. During periods of no traffic the lights should be turned off to conserve lamp life power.

"(5) ICA approaches governing operation of high intensity approach lights require the corresponding runway lights to be lighted whenever the approach lights are lighted. Although this requirement should be observed when practicable, we will permit the controller to deviate from this rule in order that the approach lights may be left on for use of the approaching aircraft while some other aircraft is using runway lights on a runway not served by the approach lights."

It should be noted that the policy refers to high intensity approach lights and does not apply to neon lanes. It is understood that neon lights will continue to be operated as in the past.

| RELATIVE BRIGHTNESS | | VISIBILITY CONDITION | |
|---|---|---|---|
| Step | Percent | Day | Night |
| 1 | 0.16 | — | 2 miles to CAVU |
| 2 | 0.80 | — | 1 mile to 2 miles |
| 3 | 4. | 2 miles to CAVU | ¼ mile to 1 mile |
| 4 | 20. | 1 mile to 2 miles | On pilot's request |
| 5 | 100. | ¼ mile to 1 mile | On pilot's request |

Table 1

## Integration of Commercial Carriers and Military

A plan calling for the integration of a segment of the U. S. commercial air fleet with the military has been approved following study by the Air Coordinating Committee, and the Air Lines Mobilization Group.

The plan calls for the "drafting" of a total of 400 four-engine commercial aircraft. 331 of the fleet are to be modified immediately for possible call on 48-hours notice.

The greater number of the fleet will come from scheduled lines, who will supply 358 of the 400. 35 will come from non-skeds, one from an intrastate line, one from CAA, and five from executive users. The cost of the modifications has been pegged at approximately $10,000,000.

The planes called for military use will be operated by airline crews under contract. The Air Force, however, will reserve the right to place air line crews directly under military control. Planes remaining in commercial use

## C-46 Weight Controversy

The C-46 weight controversy is now in the hands of the CAB. The Civil Aeronautics Administration has proposed a 12,000 pound cut in the gross weight which would bring the weight to 36,200. It is rumored that such a

cut would rule the C-46 out as a commercial passenger plane.

The CAA does not object to the use of the C-46 as a cargo plane with a gross of 48,000, but claims that the aircraft does not have the same margin of safety for passenger use as other aircraft.

## Inspection Trip of Pacific Airlift by ALPA Committee

On February 6, 1952, an ALPA committee headed by President C. N. Sayen, and including Captain R. G. Strait, ALPA Treasurer, Captain R. E. Dooley, Jr., Chairman, American Air Lines Council 39, and L. Cates, ALPA Washington Representative, left for an inspection trip of the Pacific Division of the Military Air Transport Service. The trip was in connection of establishing contracts for commercial pilots flying the Air Lift. A report on the inspection trip will be published in THE AIR LINE PILOT in a subsequent issue.

During the trip, the committee attended meetings of ALPA members based in San Francisco, Honolulu, Japan, and Seattle (see photos this page).

## IATA Technical Conference

Two important subjects of international airline concern have been chosen for detailed discussion by experts from all parts of the world at the forthcoming International Air Transport Association (IATA) Technical Conference, to be held at Copenhagen, Denmark, from May 5 through 16, it was announced today.

The first topic chosen by the IATA Technical Committee for discussion is a consideration of all factors affecting approach and landing of aircraft. The second is an exchange of views on future airborne radio equipment.

On the basis of recommendations by a special working group which studied existing situations in Europe at a meeting in London last December, the Technical Committee approved the following policy attitudes on the various short range navigational aids as a guide to IATA observers in the ICAO meeting:

**VOR (VHF Omnirange):** VOR should be installed as soon as practicable at regular and alternate international airports and along international routes wherever the operational requirements dictate the use of a short distance navigational air feature selective tracking and static-free reception, or where VOR alone or in conjunction with other systems, can most adequately meet agreed operational requirements in the area concerned. However, VOR is not considered essential where prevalent favorable weather, low traffic density and low noise level do not justify this kind of aid. VOR installations, where desirable, shall be completed as soon as possible and should be kept in operation until 1960.

**MF/DF (Medium frequency direction finding):** IATA should offer no objection to the withdrawal of MF/DF from localities where improved radio aids to final approach and landing and en route navigation are installed and found to be satisfactory.

**VHF/DF:** Use of this aid should be decided upon regionally and on the basis of local conditions. Unless other operational applications demand otherwise, VHF/DF equipment should be so located that it could also serve as a let-down aid.

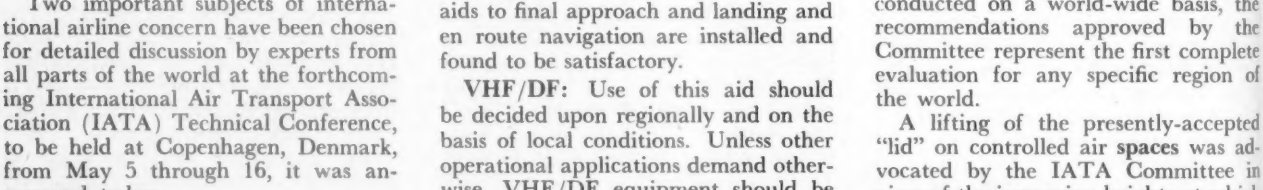
**VHF/DF Fixer Networks:** As far as local conditions permit, these networks should be tied in with appropriate units of air traffic control services so that the information they provide can be fully utilized.

**Ground Surveillance Radar:** IATA should strongly support the installation of ground radar in conjunction with navigational aids provided in terminal areas where traffic density is high or the multiplicity of converging routes creates a difficult traffic control problem. Such installations should be encouraged without regard to the ultimate development of secondary radar.

At the same time, the IATA Operations Sub-Committee was assigned to study whether the radio navigational requirements of high speed aircraft operating at high altitudes are adequately provided for.

In the field of meteorological telecommunications, the Committee approved a final report by communications experts on the number and distribution of land-line and teletype circuits necessary for the transmittal of adequate weather information in the European region. This was in turn based on studies by meteorological and operations working groups of the actual operating requirements for weather data and the volume of communications traffic which this would generate. While the latter studies were conducted on a world-wide basis, the recommendations approved by the Committee represent the first complete evaluation for any specific region of the world.

A lifting of the presently-accepted "lid" on controlled air spaces was advocated by the IATA Committee in view of the increasing heights at which modern transport aircraft are operating. Under previous IATA recommendations, full traffic control and "stacking" regulations were encour-



On the way. At Honolulu the committee met with and was feted by Hawaiian Air Lines and Trans-Pacific Air Lines pilots.

President Sayen discussed pilot problems with a group of California-based pilots in the Palo Alto home of Captain Hal Taylor.

aged up to a limit of 17,000 feet, above which simplified procedures were suggested. The new IATA recommendation proposes what would in effect be a flexible ceiling, whose limits would be determined by the highest altitude used or required by civil air transport operating in controlled air space.

A new IATA policy on fuel and oil requirements to replace the present recommendation for 45-minute fuel reserves was approved by the IATA Committee. Under its terms, these requirements should be determined by the operator on the basis of the particular considerations affecting each flight. It was felt that the 45-minute requirement was not unrealistic in view of the wide differences between aircraft now in transport operation, the introduction shortly of turbine power aircraft and the wide divergencies of operating conditions to be found throughout the world.

Official IATA endorsement was given by the Technical Committee to a statement of requirements for **marking and lighting of airport approach, threshold and runway areas** previously worked out by the IATA Flight Technical Group. Among the specific recommendations thus endorsed is that approach lighting be standardized on the center line and bar pattern used by the ALPA and Calvert approach lighting systems. The overall recommendations endeavor to integrate the various aids in the approach threshold and runway zones so as to effect a smooth transition through the three stages for the pilot making a landing.

IATA proposals for improvements in the **accuracy and reliability of instrument landing systems** (ILS) were reviewed by the Committee in preparation for forthcoming ICAO sessions. IATA hopes to see a definite requirement for tightening of standard localizer modulation tolerance to permit more efficient flag alarm operation. It also seeks an extension of the coverage of glide path equipment from 10 miles to 15 miles in view of the greater altitude of glide path equipment from 10 miles to 15 miles in view of the greater altitude of glide path interception employed by the newer types of aircraft, and has proposed changes in glide path monitor specifications.

Special local procedures governing **VFR (visual flight rules) operations** in controlled areas and control zones under marginal weather conditions when other aircraft in the region are operating on instruments were urged by the Committee. It was pointed out that there was some hazard of collision on occasions when local flights operating into an airport were on VFR while long-distance aircraft coming into the same area were adhering to instrument flight rules.

IATA action in asking ICAO to approve the use of the **airline code abbreviation** followed by the trip number as one of the accepted radiotelephone call signs provided in the ICAO Communications Division's R/T procedures was endorsed by the Committee.

## Growth of Air Transport

The vast expansion of civil air transport since 1937, and its less spectacular but steady increase since 1947, is illustrated in statistics of international and domestic scheduled air lines just released by the International Civil Aviation Organization.

Passenger miles flown in 1950 were more than 18 times those flown in 1937, passengers carried more than seven times, and miles flown quintupled. The advent of newer and larger airliners is shown by the fact that the average number of passengers carried per aircraft is now 3½ times as great as it was in 1937.

Comparison of figures for 1947 and 1950 show an increase in cargo transportation by air of more than 150 per cent, of passengers carried by 44 per cent, of mail by 58 per cent. The average number of passengers per aircraft has gone up by 12 per cent, and miles flown by twice that amount.

## Upper Air Weather Forecasting

Weather stations ringing the North Atlantic Ocean are participating in an experiment sponsored by the International Civil Aviation Organization to see whether better upper air weather forecasting will pay off in increased payloads and economical operation for airlines flying across the North At-

On the way home. The committee discussed the trip with Seattle pilots.

lantic. During two separate two-week periods each weather station is lounging a balloon carrying an automatic radio transmitter. The balloons will be released every six hours of the day and will be tracked by means of radar or radio directional finding equipment.

Using the technique of "pressure-pattern flying," airliners go out of their direct routes to find tail winds that will help them complete their trips more quickly and economically, even if the mileage of their new routes is actually greater than that of the direct line. As a result of these favorable winds they require smaller gas loads, and can carry heavier payloads. The use of this flying technique requires accurate weather forecasting at upper air altitudes, and these forecasts in turn require more upper air weather observations. The main purpose of the ICAO experiment is to find out whether increased economy for the airline operators will make up for the additional cost of the increased number of observations.

During the program, and in the control periods before and after it, airliners flying across the North Atlantic will make special reports concerning observed, compared with forecast, winds to see to what extent the regular upper air forecasts are improved by more abundant observations.

## Rickenbacker Group Asks For Newark Reopening

The House Interstate Sub-committee on air safety was urged to reopen Newark Airport with certain limitations as to operating procedures on March 12 by Captain E. V. Rickenbacker who appeared to make a report on behalf of the National Air Transport Coordinating Committee. Rickenbacker said large airports such as Newark are closely aligned with the national economy and the rearmament program and should be kept open when not clearly found to be unsafe. He added that there was absolutely nothing about the Newark Airport operations or facilities which was in anyway responsible for the accidents there in the December-February period.

## Jet Transport Performance

AVIATION WEEK reported in its March 10 issue on the performance of the de Haviland Comet, the 4-jet transport, which British Overseas Airways Corp. will begin operating in a matter of weeks.

Reports AVIATION WEEK: "Approach speeds are not high, even at the maximum landing weight of 80,000 pounds, and generous flap area with a nose-up attitude enables the aircraft to lose speed for the touchdown fairly rapidly.

"From a standing start, the four Ghost turbojets have to be opened to almost full power, so that once the aircraft commences to roll, it should keep going until lined up for take-off. Stopping and starting involves a very heavy fuel penalty."

The report goes deeply into the operational advantages and faults of the Comet. Considering that U. S. pilots may soon find themselves piloting similar aircraft, the report should be of interest to them.

## Critical Airport Problem Continues

Meetings of the National Air Transport Coordinating Committee on National Airport problems continue in view of the critical airport problem in the New York area and the threat that it will continue to spread to other areas. ALPA representatives in the New York area continue daily meetings with citizen groups, etc., in order to keep air transportation moving and prevent an arbitrary regulation of air traffic which might jeopardize safe operation and the prerogatives of the pilot. Should another airport be closed in the New York area, the schedules flown by approximately 1500 pilots living in or flying into New York would have to be cancelled. The normal summer expansion of schedules into New York has been curtailed.

The NATCC, consisting of representatives of ALPA, the Airlines, Aircraft Manufacturers, Port Authority, CAA, CAB, Airport Managers, AOPA, and others, have designated a three man subcommittee to direct a program dealing with the airport problem in the same area and nationally. The sub-committee consists of C. R. Smith, President of AAL, C. N. Sayen, President of ALPA, and Austin Tobin, Director of the New York Port Authority.

## Pilots' Wives:

**Following is a portion of a letter received at ALPA Headquarters from the wife of pilot Waldon P. Snyder, Capital Air Lines, Council 11, Gainesville, Va. We believe it qualifies for reprinting in The Pilot. . . .**

**THE EDITOR**

. . . (I) would like to take this opportunity to say that since the 'change in management'—bulletins, letters, etc. from Headquarters have greatly improved in the writing and context.

In one, I note you were most emphatic in denying the charges that the pilots' wives run their business. I hope you aren't opposed to us taking a sincere interest in our husbands' affairs. If we seem more interested than the wives of other men in other work—remember we're the girls routing wakes up at 2 a.m. to find out 'where Pete is' and Pete's flying a trip for them at the time); we're the ones who get up and fix breakfast before a 3 a.m. takeoff—and the ones who deliver babies while Daddy's up in the blue—and who meet many dire emergencies alone because friend husband can't be there—who spend Christmas alone—who can never plan for sure on anything—and above all—we're the ones who would never never let our husbands know we sometimes worry.

Of course, we are vitally interested in their jobs—in anything that will make it safer or better and if the charge is that we take too active an interest in their business then the reply should be that we can't avoid it and don't want to. It certainly doesn't require apology or denial—air line pilots, doctors, lawyers, or president even—be it ever so humble the adage remains—"The hand that rocks the cradle, etc. etc."—

Cordially yours,

A 4-time cradle rocker,

/s/ Anne Snyder

**ALPA FCU Financial and Statistical Report of February 29, 1952**

**BALANCE SHEET**

**Assets**

| | Feb. 1952 |
|---|---|
| Loans | $300,329.69 |
| Cash | 45,299.35 |
| U. S. Bonds | 184,420.32 |
| Federal Savings & Loan | |
| Furniture and Fixtures | 2,076.98 |
| Prepaid Expense and Misc. | 841.43 |
| Total | $532,967.77 |

**Liabilities**

| | |
|---|---|
| Shares | $516,539.97 |
| Reserve for Bad Loans | 8,769.21 |
| Undivided Profits | 4,421.91 |
| Profit | 3,058.09 |
| Accounts Payable | 178.59 |
| Total | $532,967.77 |

**STATEMENT OF INCOME & EXPENSE (Year to Date 1952)**

**Income**

| | Feb. 1952 |
|---|---|
| Interest on Loans | $ 2,571.07 |
| Investment Income | 187.50 |
| Other Income | 0 |
| Total | $ 2,758.57 |

**Expenses**

| | |
|---|---|
| Other Salaries | $ 1,003.90 |
| Office Supplies | 0 |
| Educational Expense | 0 |
| Loan Insurance | 218.18 |
| ALPA Reimbursement | 0 |
| Depreciation | 54.25 |
| Legal and Collection Expense | 6.67 |
| Postage | 126.08 |
| Miscellaneous | 43.35 |
| Total | $ 1,452.43 |
| Net Profit | $ 1,306.14 |

**Statistical Information**

| | Feb. 1952 |
|---|---|
| Number of Members | 1,998 |
| Number of Potential Members | 9,798 |
| Loans Made Since Organization (Number) | 1,615 |
| Loans Made Since Organization (Amount) | $1,038,027.53 |

## Air Line Pilot in Higher Age Range

*(Cont. from Page 5)*

tends to offset the younger pilot's physiological advantage in reaction time. In airline operations the captain and co-pilot tend to work together as a team in a very effective manner.

### Conclusion

The general conclusions which might be drawn from these examples are as follows: As a larger number of airline pilots reach the older age ranges, i. e., between 50 to 55 and 55 to 60 years of age, their reactions may be critical or borderline in efficiency when they are carrying out very complicated tasks within specific time intervals. Changes in their physiological adaptation, hearing, vision, and memory are not likely to impair their efficiency before 50 or 55 years of age. Beyond this age range, however, they should be carefully checked in routine flight tests in a thorough and objective manner. Undoubtedly, the excellent safety record of the Civil Airlines is due to the fact that such rigid flight tests are continuously applied by the scheduled airline operators. Anything which can be done to improve the standardization, objectivity, and thoroughness of these flight checks will be a constructive advance in the interests of safety.

# The Facts Are These

## Is Fare Fair?

Recently in these columns an optimistic view was taken concerning the air transport picture for 1952. At that time, air lines were enthusiastically petitioning the C.A.B. for coach fares and the C.A.B. itself was proposing and encouraging such activity. Many felt that a new era in air transportation had arrived and that new masses of potential passengers would be attracted by bargain rates. In the past weeks, however, leading air lines have petitioned the C.A.B. for increases in air line fares. These proposals are almost all fashioned after the pattern proposed by American, TWA, and Eastern in that they suggest the addition of $1.00 to all domestic fares and elimination of discounts for round trips. It seems obvious from the nature of these proposals that they are intended to be temporary revenue producers which may be, at some future date, withdrawn without permanent change of the current fare structure.

Coinciding with the timing of these proposals, Oswald Ryan, a member of the C.A.B., gave a somewhat pessimistic speech on the future of the air transport business before the Aero Club of Washington, D. C. Significantly, Mr. Ryan pointed out that if the air lines suffered an economic setback similar to that experienced in 1947 and 1948, it would be doubtful whether Congress would be willing to contribute the large subsidy funds needed for survival.

It is no doubt true as Mr. Ryan points out that air line costs have been rising of late, and Mr. Ryan as an agent of the government should know for taxes have played no small part in these rising costs. If United Air Lines may be taken as an example, its 1951 financial report indicates that out of every expense dollar, 11c was expended for Income and Miscellaneous Taxes. This compares to 9c out of every dollar so expended in the previous year. In round tax dollars, this was an increase of 46 percent. In addition to this, United Air Lines collected 14 million dollars for the government in transportation taxes. This transportation tax which was instituted in 1941 and which now amounts to 15 percent on all air line fares has yielded the government $372,605,638 in the last ten years. In the year 1951 alone the revenue from this transportation tax in the air line industry amounted to $67,387,947. The total mail pay for 1951 amounted to $61,934,000. Of this mail pay the C.A.B. estimates that $27,000,000 is considered service pay and $34,000,000 subsidy.

It would, no doubt, be foolish to suggest that this transportation tax be reduced, fares raised in accordance with this reduction and subsidies discontinued, but the net results to the government, the industry and the public would probably be a considerable saving. The tremendous expense of collecting the tax and redistributing it through various other governmental departments in the form of mail pay would thus be eliminated. Of course, this is too simple a solution. Since this $67,000,000 collected in the form of transportation tax is collected from the respective air lines in different proportions to the distribution of air mail pay, and it can be readily seen that though the leading trunk lines collect more of this tax than they receive in mail pay the opposite is true of some of the less lucrative regional service lines.

This article does not aim to solve this knotty problem, but it might serve to point out that the indignant taxpayer may not be contributing a dime toward subsidizing air lines—maybe it is the air line passengers who are paying the total fare.

## In Memoriam

**Leland C. Brown**

***of United Airlines, died of a heart attack shortly after take-off from Honolulu on February 24, 1952.***

**In the future, the feature, "In Constant Memoriam," will appear only in designated memorial issues.**

# I've Just Given My Blood and I Feel Wonderful!

"Certainly I didn't mind giving blood—I hardly felt it. But the *big* thing is I know I've done something unselfish—I've helped a wounded fighting man. Maybe I've saved his life. You'll never know what a thrill it is—until you give so that a man may live."

Arrange today to give blood. It's a great feeling to get off the side lines and help to save the life of a fellow-American!

**WHAT HAPPENED TO THAT PINT OF BLOOD YOU WERE GOING TO GIVE?**

TENTH ANNIVERSARY

**Armed Forces Blood Donor Program**